FCC 47 CFR PART 15 SUBPART C

C2PC CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC

MODEL NUMBER: LG-D631, D631, LGD631

FCC ID: ZNFD631

REPORT NUMBER: 14U17500-2

ISSUE DATE: JUNE 14, 2014

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	06/14/14		P. Zhang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	**LG ELECTRONICS MOBILECOMM U.S.A., INC**
EUT DESCRIPTION:	**GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC.**
MODEL:	**LG-D631, D631, LGD631**
SERIAL NUMBER:	**18UL4 (Radiated)**
DATE TESTED:	**MAY 27 – JUNE 11, 2014**

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	11.22	13.23
2402 - 2480	Enhanced 8PSK	9.73	9.39

Note: GFSK, Pi/4-DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on this mode to showing compliance. For average power data please refer to section 8.6.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -8.45 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG ELECTRONICS	MCS-01WD	DB390078751	N/A
Earphone	LG ELECTRONICS	LG-D631	N/A	N/A
PowerMat	DURACELL	KSAP0151800083HU	N/A	N/A
PMA cover	LG ELECTRONICS	N/A	N/A	N/A

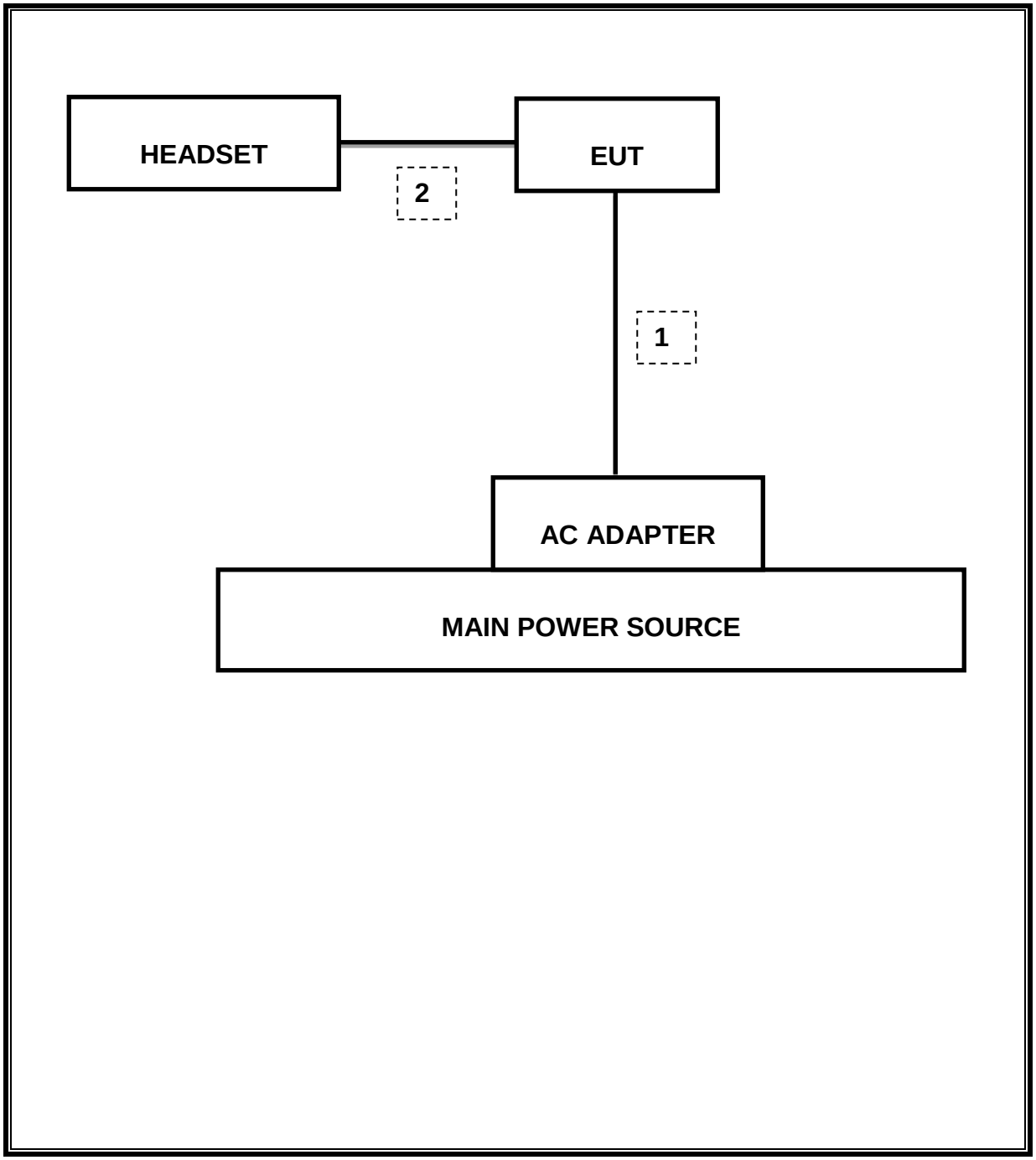
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
EUT was set in the Hidden menu mode to enable BT communications.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	02/13/15
Antenna, Horn, 18GHz	EMCO	3115	C00783	10/25/14
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/15
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
CBT Bluetooth Tester	R & S	CBT	None	07/12/14
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/15
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	N02684	CNR
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14

7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	RSS-GEN 4.6	Occupied Band width (99%)	N/A	Conducted	Pass	see original
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	see original
15.247 (b)(1)	RSS-210 A8.4	TX conducted output power	<21dBm		Pass	see original
15.247 (a)(1)	RSS-210 A8.1(b)	Hopping frequency separation	> 25KHz		Pass	see original
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Number of Hopping channels	More than 15 non-overlapping channels		Pass	see original
15.247 (a)(1)(iii)	RSS-210 A8.1(d)	Avg Time of Occupancy	< 0.4sec		Pass	see original
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	see original
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	38.79dBuV/m

8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 1/T (on time) for average measurement. GFSK = 1/T = 1 / 0.0028S = 360Hz.

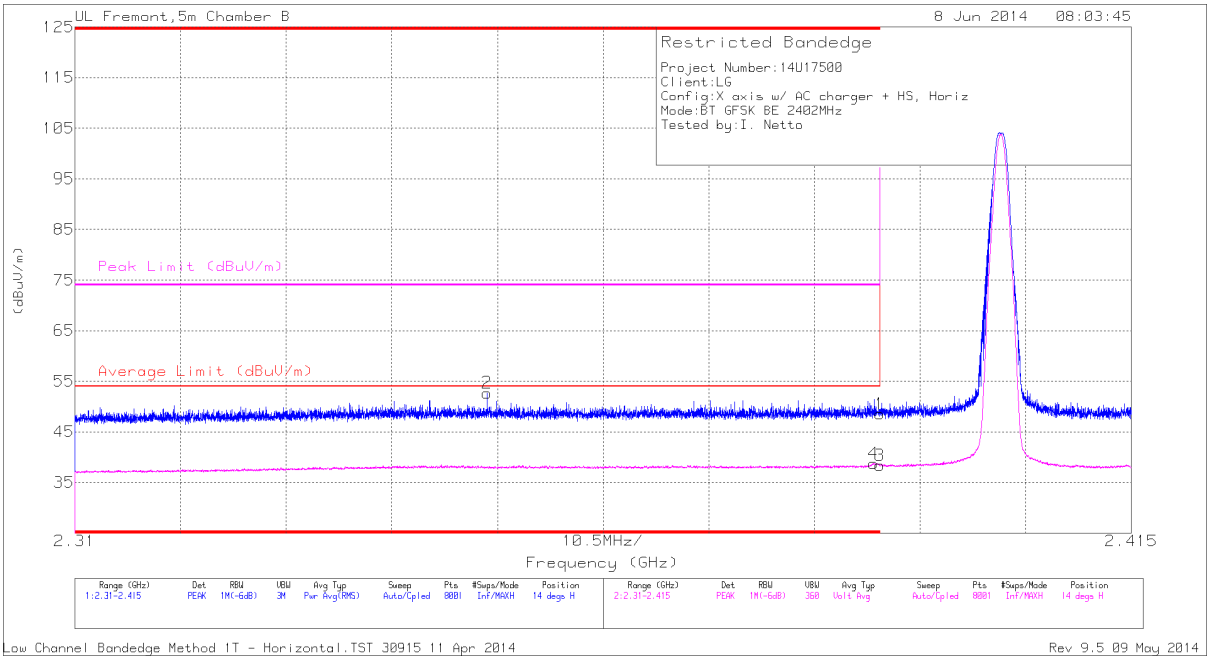
The spectrum from 1GHzHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



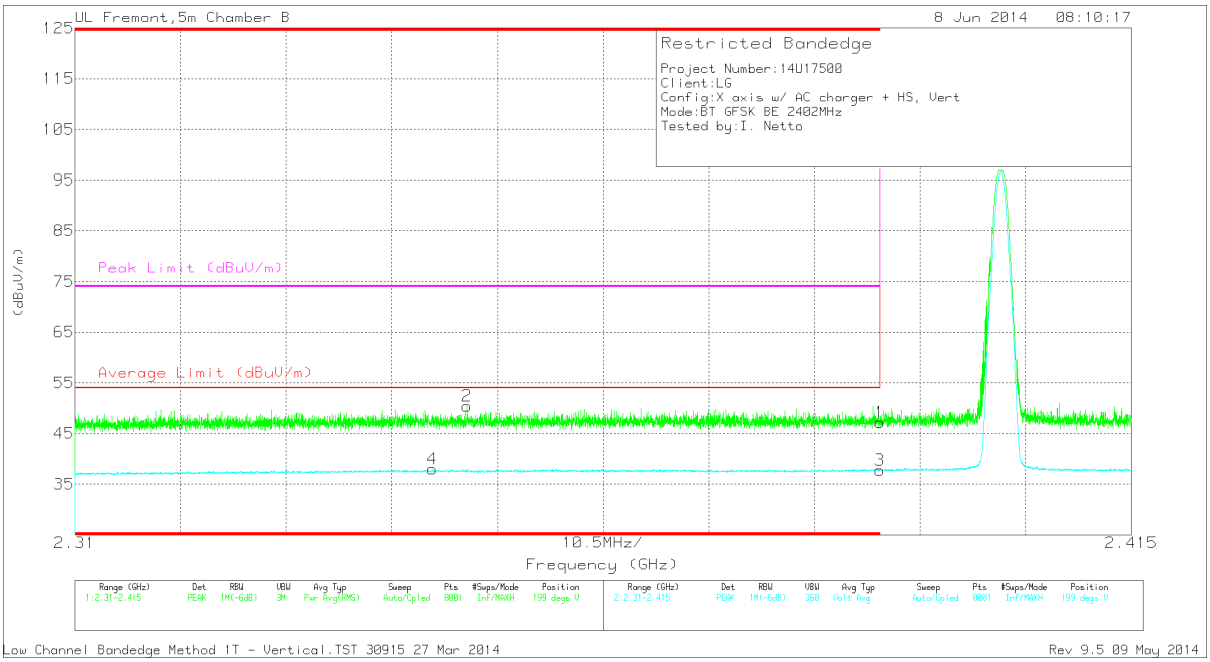
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.2	PK	32.1	-22.8	48.5	-	-	74	-25.5	14	196	H
2	* 2.351	43.71	PK	31.9	-22.9	52.71	-	-	74	-21.29	14	196	H
3	* 2.39	29.05	VB1T	32.1	-22.8	38.35	54	-15.65	-	-	14	196	H
4	* 2.389	29.49	VB1T	32.1	-22.8	38.79	54	-15.21	-	-	14	196	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



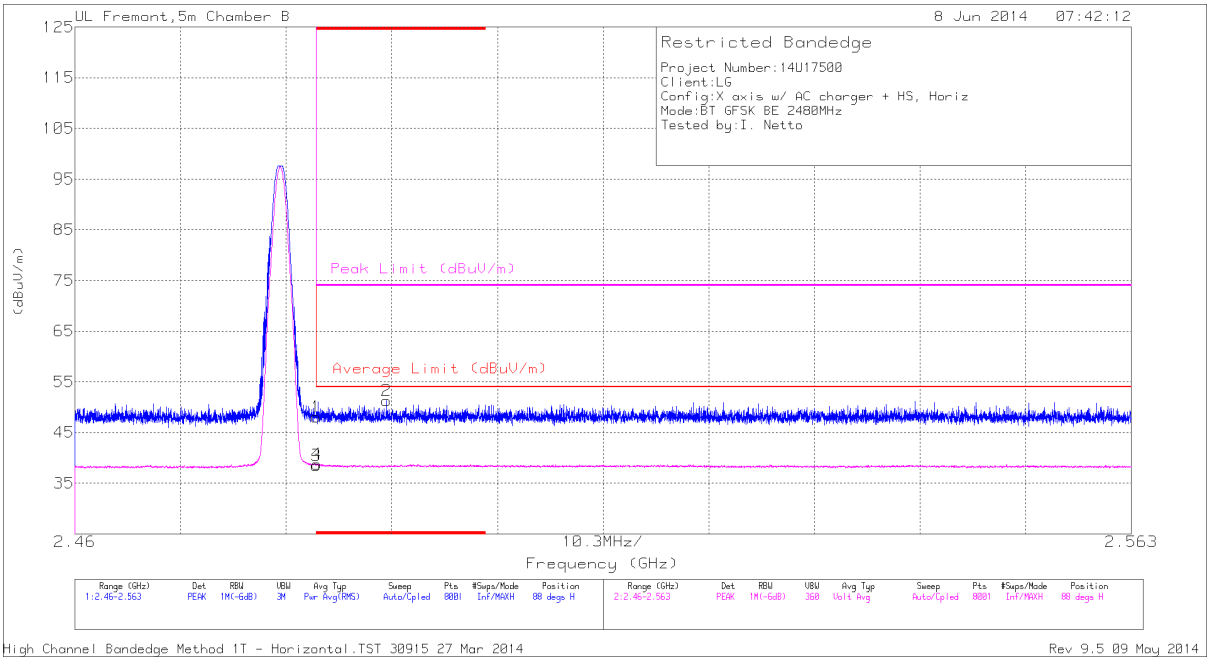
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.94	PK	32.1	-22.8	47.24	-	-	74	-26.76	199	245	V
2	* 2.349	41.39	PK	31.9	-22.9	50.39	-	-	74	-23.61	199	245	V
3	* 2.39	28.45	VB1T	32.1	-22.8	37.75	54	-16.25	-	-	199	245	V
4	* 2.346	29.02	VB1T	31.9	-22.9	38.02	54	-15.98	-	-	199	245	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



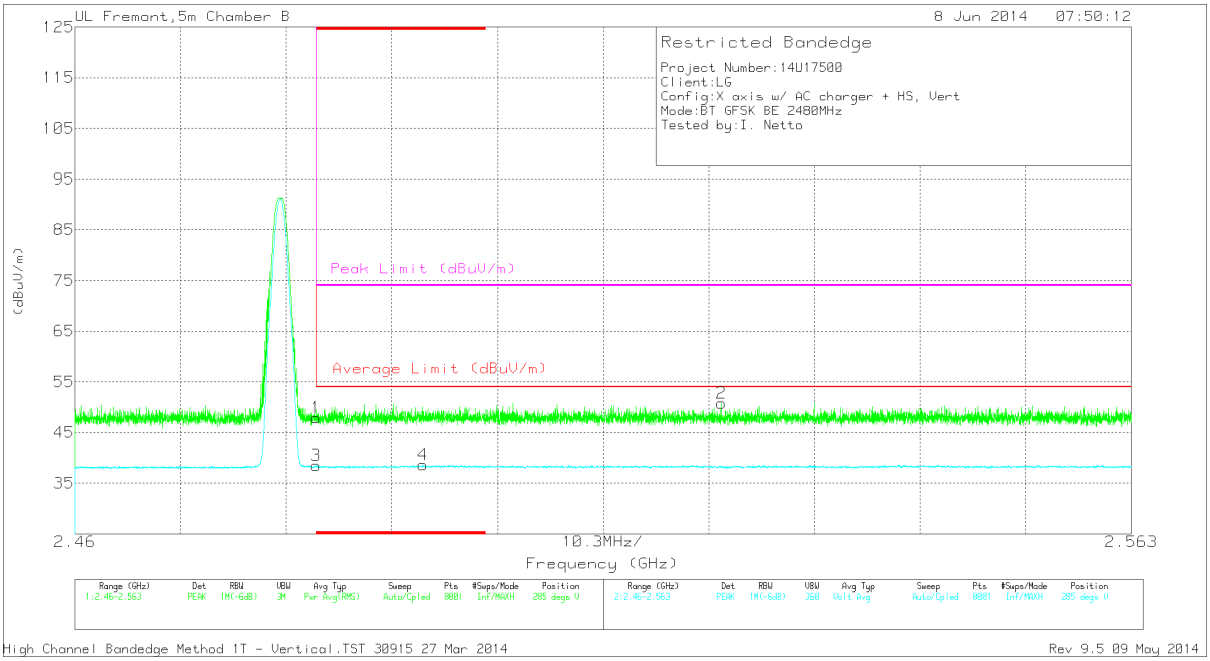
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.41	PK	32.4	-22.7	48.11	-	-	74	-25.89	88	336	H
2	* 2.49	41.62	PK	32.4	-22.7	51.32	-	-	74	-22.68	88	336	H
3	* 2.484	28.85	VB1T	32.4	-22.7	38.55	54	-15.45	-	-	88	336	H
4	* 2.484	29.08	VB1T	32.4	-22.7	38.78	54	-15.22	-	-	88	336	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.25	PK	32.4	-22.7	47.95	-	-	74	-26.05	285	382	V
3	* 2.484	28.75	VB1T	32.4	-22.7	38.45	54	-15.55	-	-	285	382	V
4	* 2.494	28.9	VB1T	32.4	-22.7	38.6	54	-15.4	-	-	285	382	V
2	2.523	40.91	PK	32.5	-22.6	50.81	-	-	74	-23.19	285	382	V

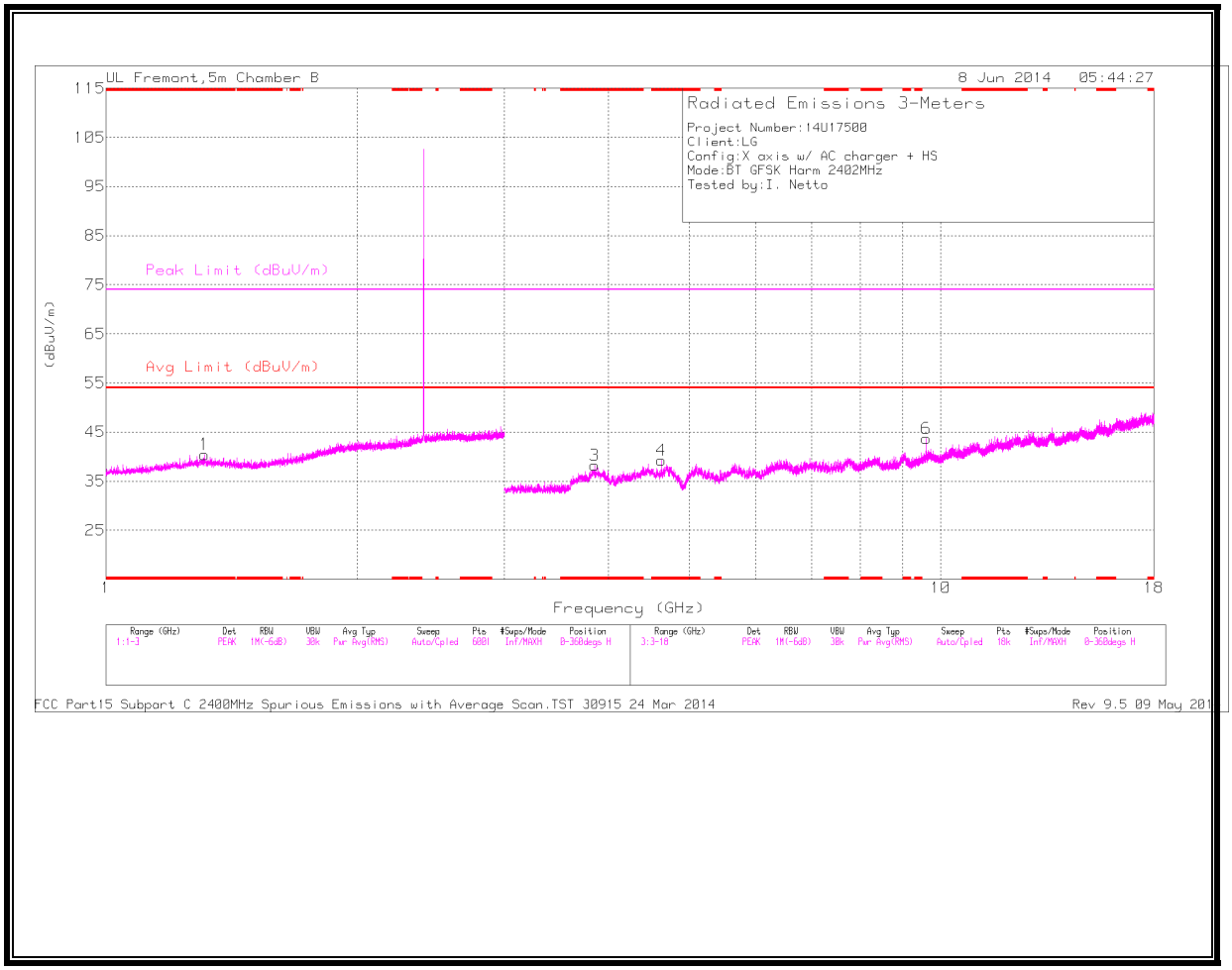
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

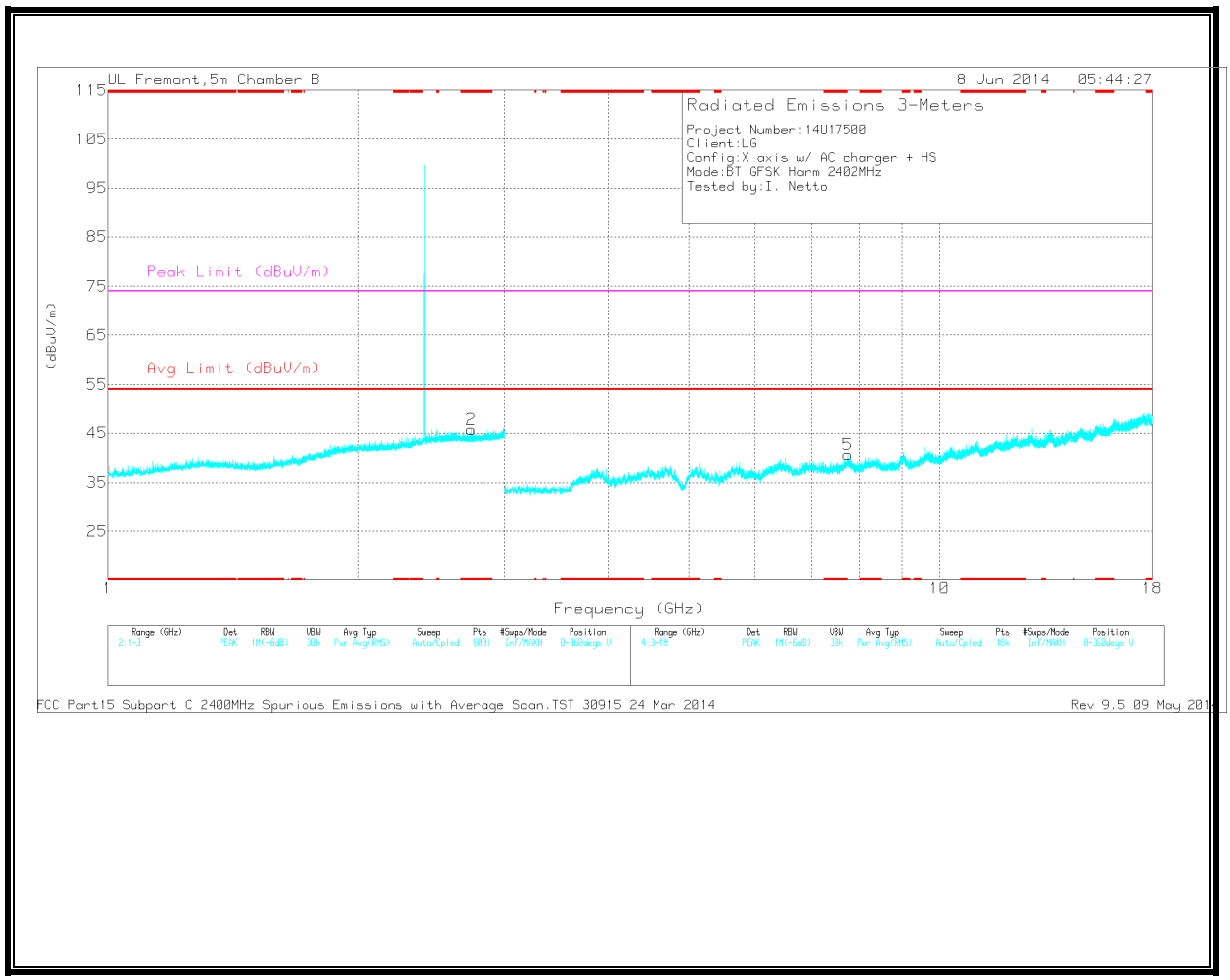
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.312	36.16	PK	28.8	-24.5	40.46	-	-	74	-33.54	0-360	202	H
2	* 2.732	35.7	PK	32.2	-22.2	45.7	-	-	74	-28.3	0-360	200	V
3	* 3.852	34.82	PK	33.7	-30.3	38.22	-	-	74	-35.78	0-360	101	H
4	* 4.629	35.89	PK	34.2	-30.8	39.29	-	-	74	-34.71	0-360	201	H
5	7.769	30.54	PK	35.7	-25.6	40.64	-	-	-	-	0-360	200	V
6	9.608	30.99	PK	36.8	-24.1	43.69	-	-	-	-	0-360	201	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

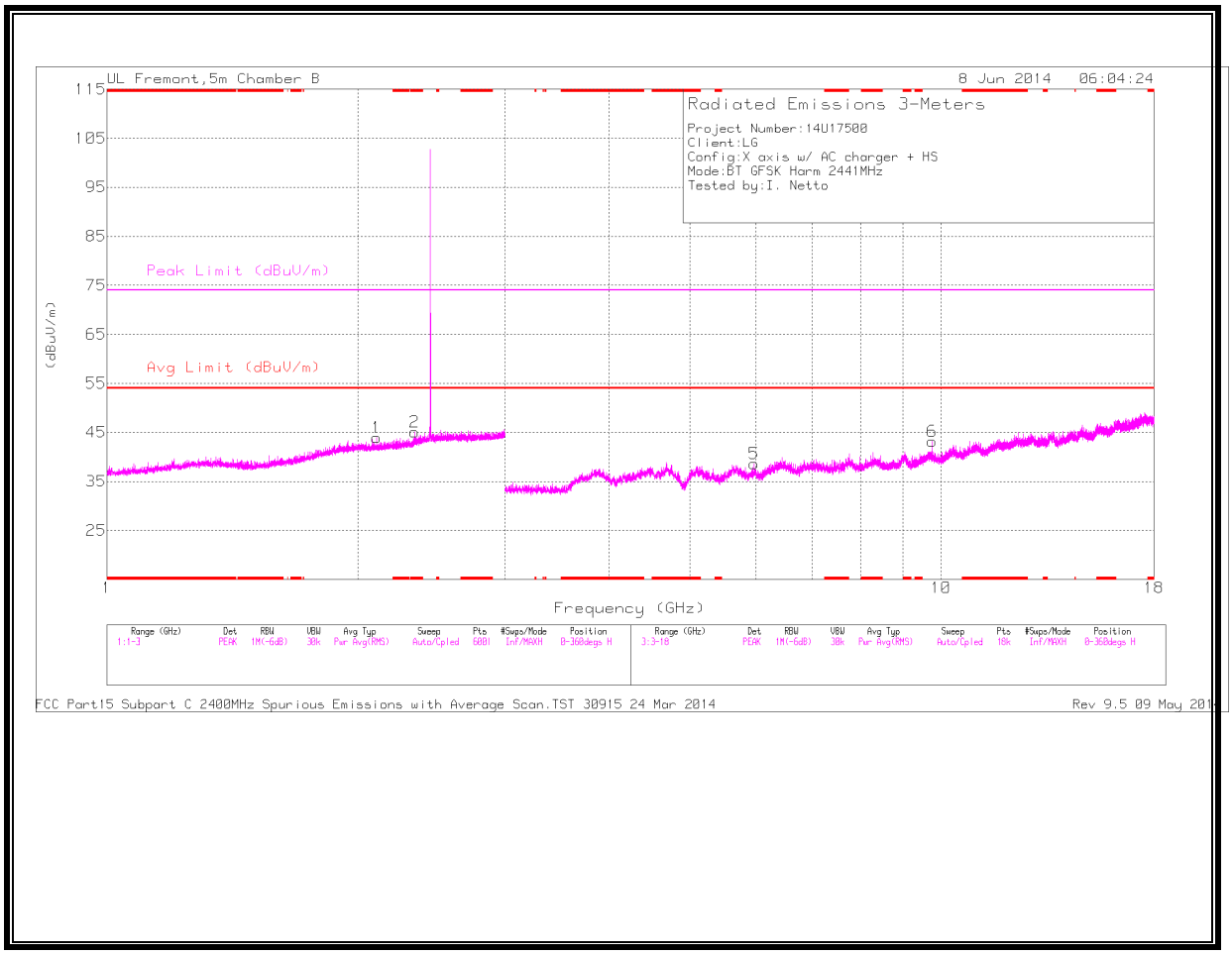
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.307	43.41	PK3	28.8	-24.5	47.71	-	-	74	-26.29	1	203	H
* 2.732	43.19	PK3	32.2	-22.2	53.19	-	-	74	-20.81	1	201	V
* 3.853	41.65	PK3	33.7	-30.3	45.05	-	-	74	-28.95	1	102	H
* 4.629	41.91	PK3	34.2	-30.8	45.31	-	-	74	-28.69	1	202	H
7.768	37.99	PK3	35.7	-25.6	48.09	-	-	-	-	1	202	V
9.608	36.86	PK3	36.8	-24.1	49.56	-	-	-	-	1	202	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

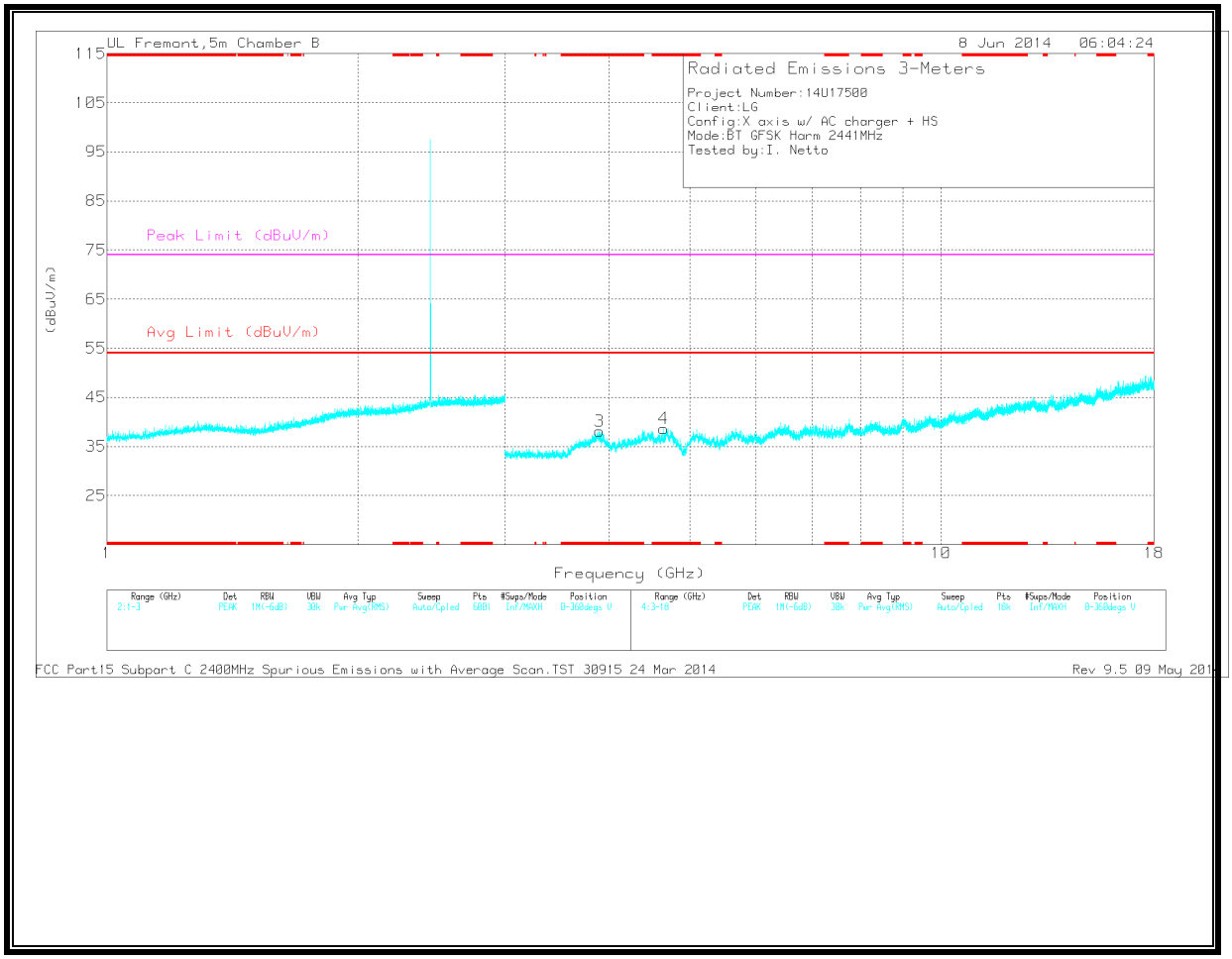
PK3 - FHSS Method: Maximum Peak

MID CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.339	36.16	PK	31.8	-22.9	45.06	-	-	74	-28.94	0-360	202	H
3	* 3.892	34.52	PK	33.8	-30.2	38.12	-	-	74	-35.88	0-360	200	V
4	* 4.654	34.98	PK	34.2	-30.5	38.68	-	-	74	-35.32	0-360	101	V
1	2.104	35.92	PK	31.2	-23.2	43.92	-	-	-	-	0-360	202	H
5	5.968	31.89	PK	35.2	-28.5	38.59	-	-	-	-	0-360	201	H
6	9.764	29.94	PK	36.9	-23.7	43.14	-	-	-	-	0-360	201	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

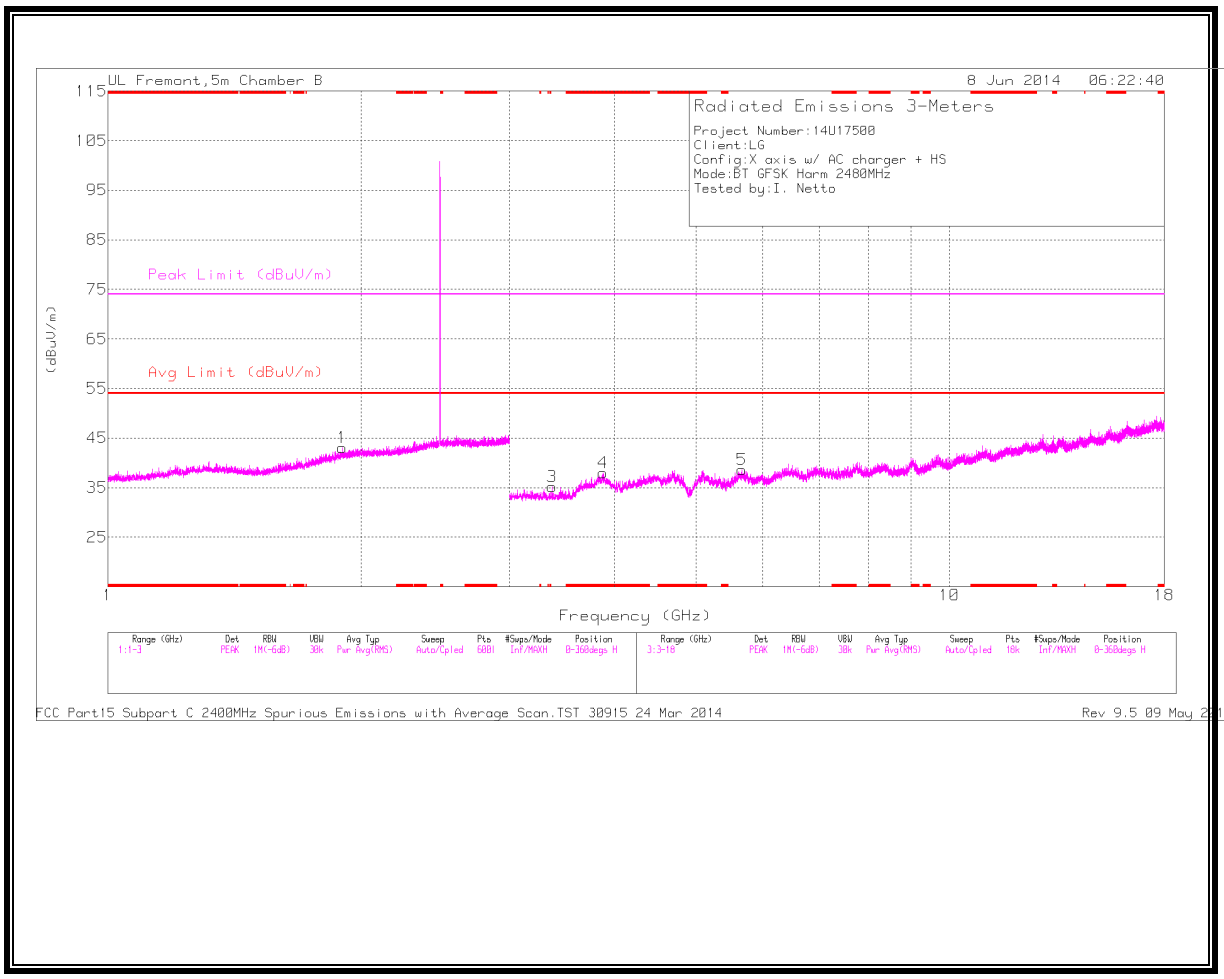
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.339	43.04	PK3	31.8	-22.9	51.94	-	-	74	-22.06	1	203	H
* 3.894	41.69	PK3	33.8	-30.2	45.29	-	-	74	-28.71	1	203	V
* 4.654	41.41	PK3	34.2	-30.5	45.11	-	-	74	-28.89	1	102	V
2.105	43.12	PK3	31.2	-23.2	51.12	-	-	-	-	1	203	H
5.97	39.16	PK3	35.2	-28.5	45.86	-	-	-	-	1	203	H
9.763	35.84	PK3	36.9	-23.7	49.04	-	-	-	-	1	203	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

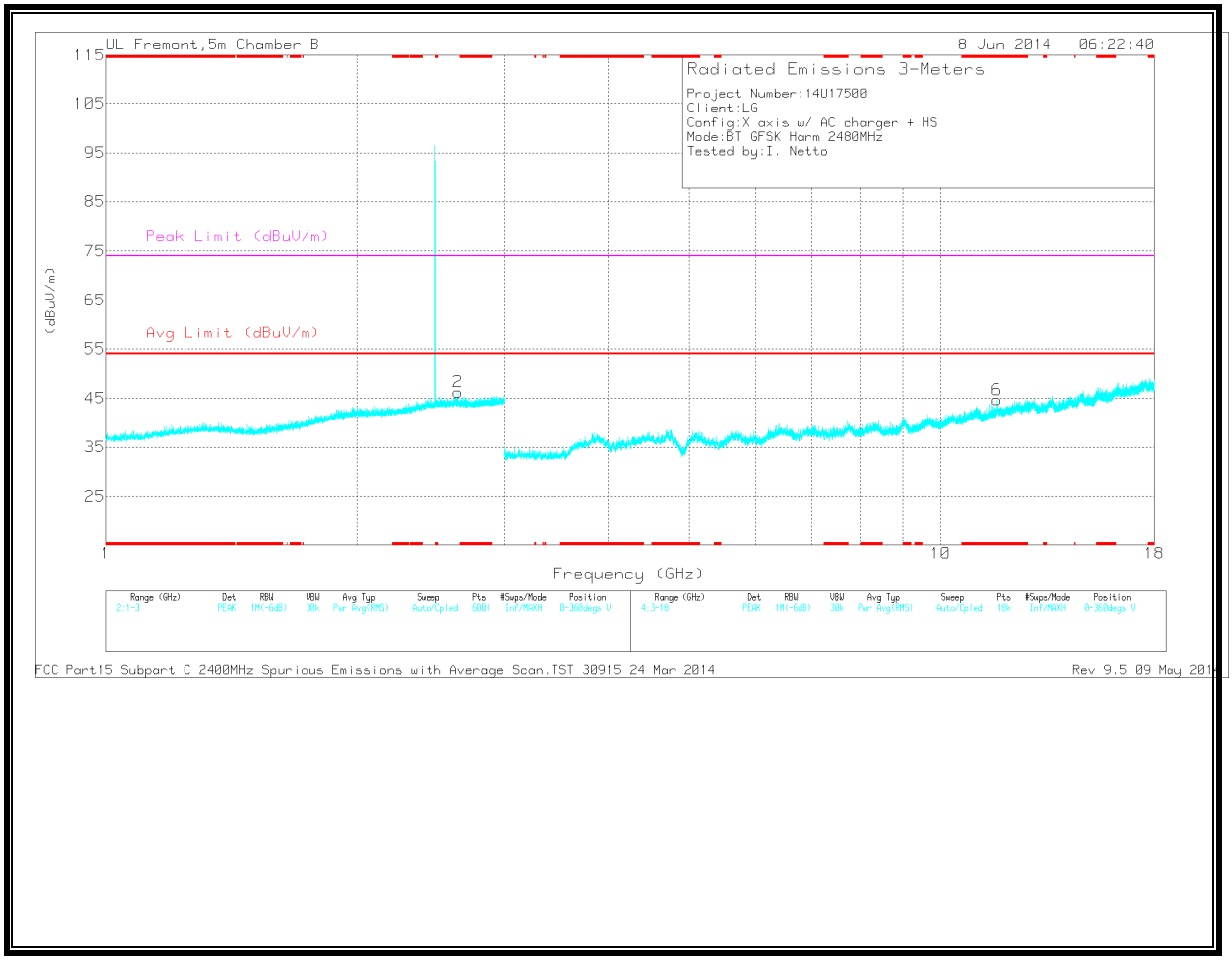
PK3 - FHSS Method: Maximum Peak

HIGH CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 3.873	34.44	PK	33.8	-30.3	37.94	-	-	74	-36.06	0-360	201	H
6	* 11.668	27.88	PK	38.2	-21.4	44.68	-	-	74	-29.32	0-360	101	V
1	1.898	35.53	PK	31	-23.5	43.03	-	-	-	-	0-360	200	H
2	2.64	36.5	PK	32.4	-22.6	46.3	-	-	-	-	0-360	201	V
3	3.369	33.78	PK	32.8	-31.4	35.18	-	-	-	-	0-360	100	H
5	5.662	33.54	PK	34.5	-29.4	38.64	-	-	-	-	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

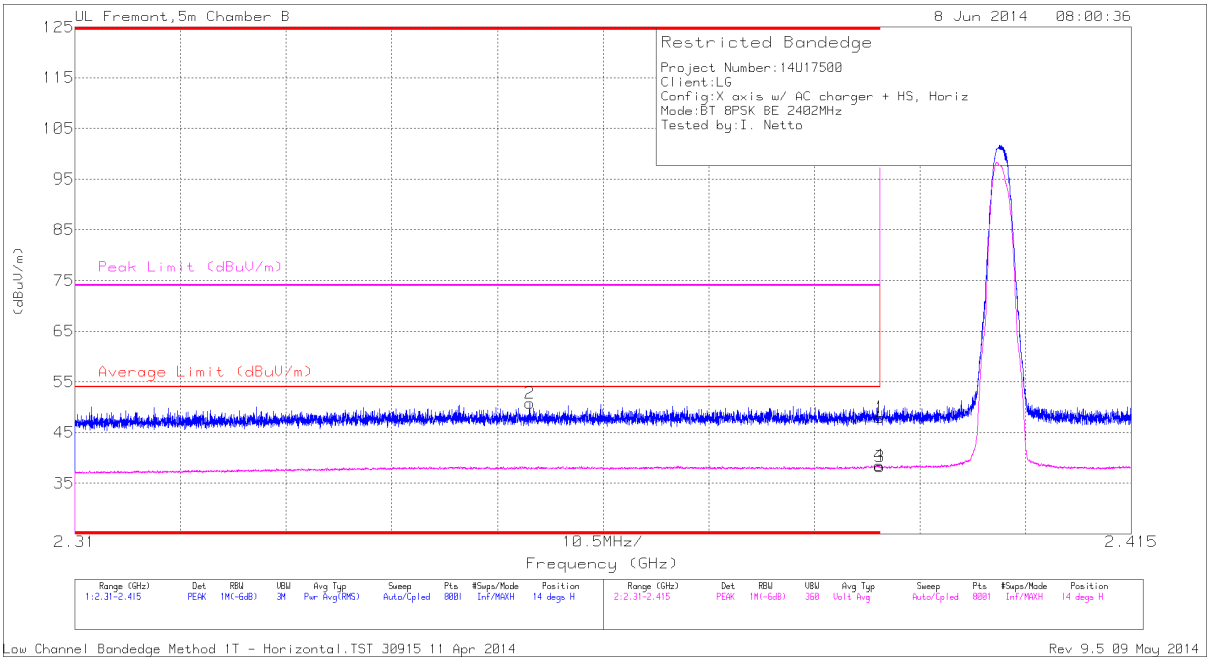
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.874	41.69	PK3	33.8	-30.3	45.19	-	-	74	-28.81	1	202	H
* 11.668	33.79	PK3	38.2	-21.4	50.59	-	-	74	-23.41	1	100	V
1.897	43.4	PK3	31	-23.5	50.9	-	-	-	-	1	201	H
2.641	43.26	PK3	32.4	-22.5	53.16	-	-	-	-	1	201	V
3.368	41.85	PK3	32.8	-31.4	43.25	-	-	-	-	1	101	H
5.662	41.22	PK3	34.5	-29.4	46.32	-	-	-	-	1	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

8.2.2. ENHANCED DATA RATE 8PSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



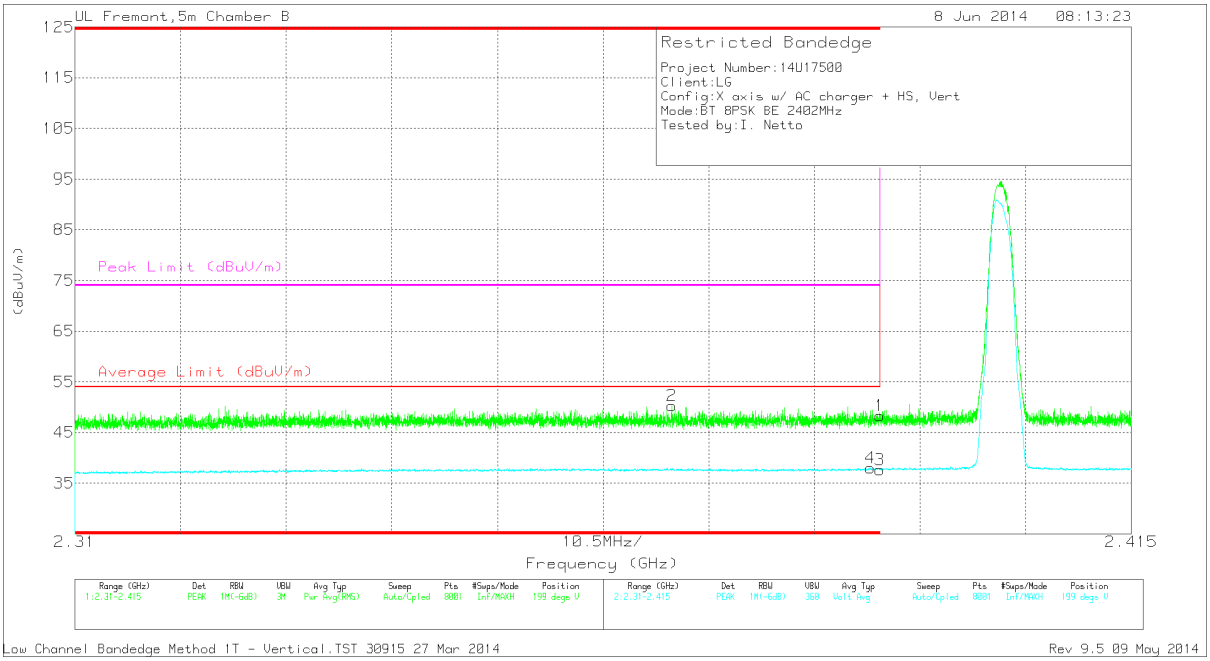
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.69	PK	32.1	-22.8	47.99	-	-	74	-26.01	14	196	H
2	* 2.355	41.77	PK	31.9	-22.9	50.77	-	-	74	-23.23	14	196	H
3	* 2.39	28.95	VB1T	32.1	-22.8	38.25	54	-15.75	-	-	14	196	H
4	* 2.39	29.24	VB1T	32.1	-22.8	38.54	54	-15.46	-	-	14	196	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



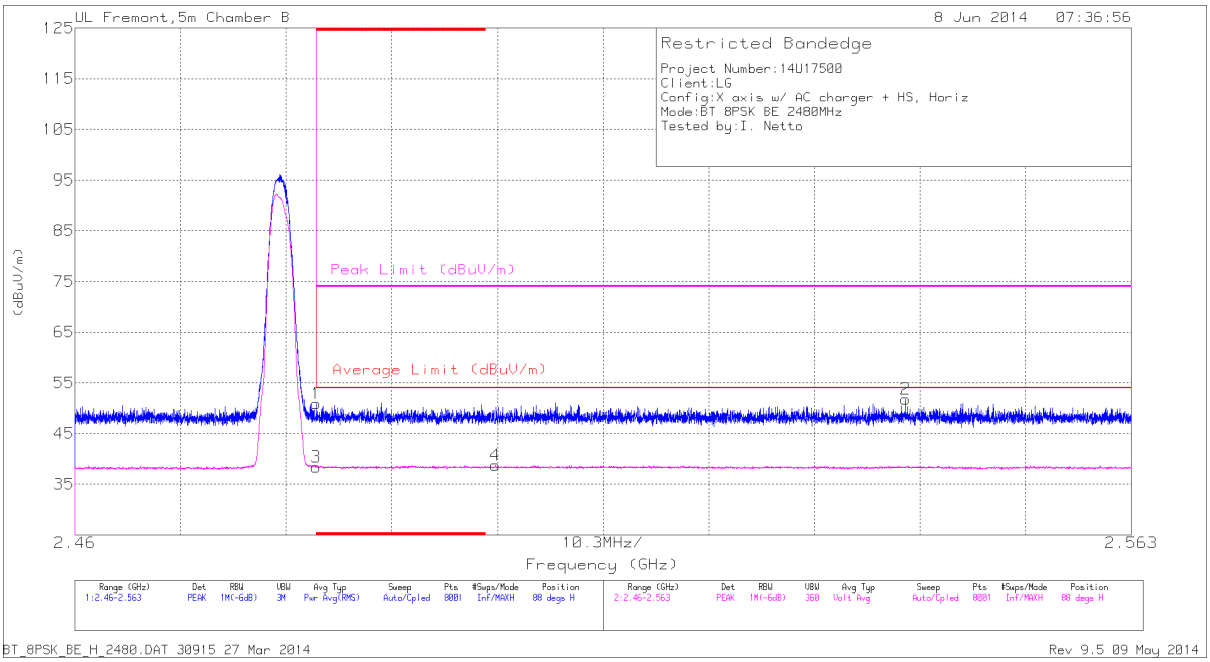
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.99	PK	32.1	-22.8	48.29	-	-	74	-25.71	199	245	V
2	* 2.369	41.13	PK	32	-22.8	50.33	-	-	74	-23.67	199	245	V
3	* 2.39	28.35	VB1T	32.1	-22.8	37.65	54	-16.35	-	-	199	245	V
4	* 2.389	28.67	VB1T	32.1	-22.8	37.97	54	-16.03	-	-	199	245	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



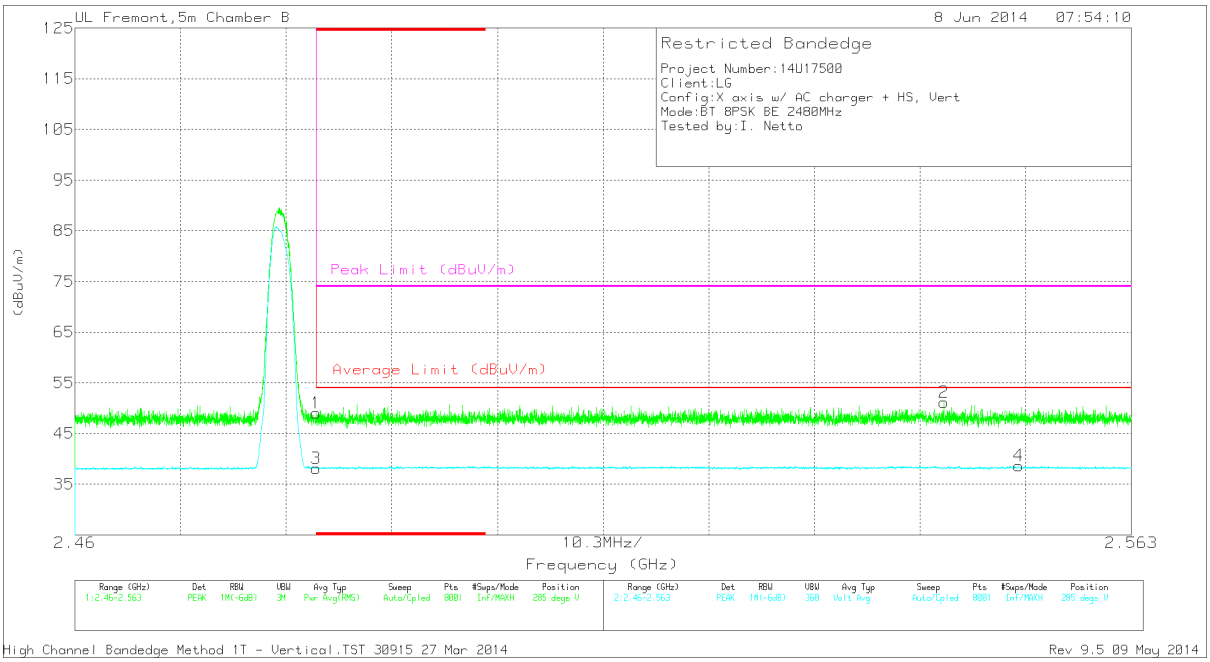
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.21	PK	32.4	-22.7	50.91	-	-	74	-23.09	88	336	H
3	* 2.484	28.68	VB1T	32.4	-22.7	38.38	54	-15.62	-	-	88	336	H
4	2.501	29.01	VB1T	32.4	-22.7	38.71	54	-15.29	-	-	88	336	H
2	2.541	41.85	PK	32.5	-22.6	51.75	-	-	74	-22.25	88	336	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.34	PK	32.4	-22.7	49.04	-	-	74	-24.96	285	382	V
3	* 2.484	28.41	VB1T	32.4	-22.7	38.11	54	-15.89	-	-	285	382	V
2	2.545	41.23	PK	32.5	-22.6	51.13	-	-	74	-22.87	285	382	V
4	2.552	28.78	VB1T	32.5	-22.6	38.68	54	-15.32	-	-	285	382	V

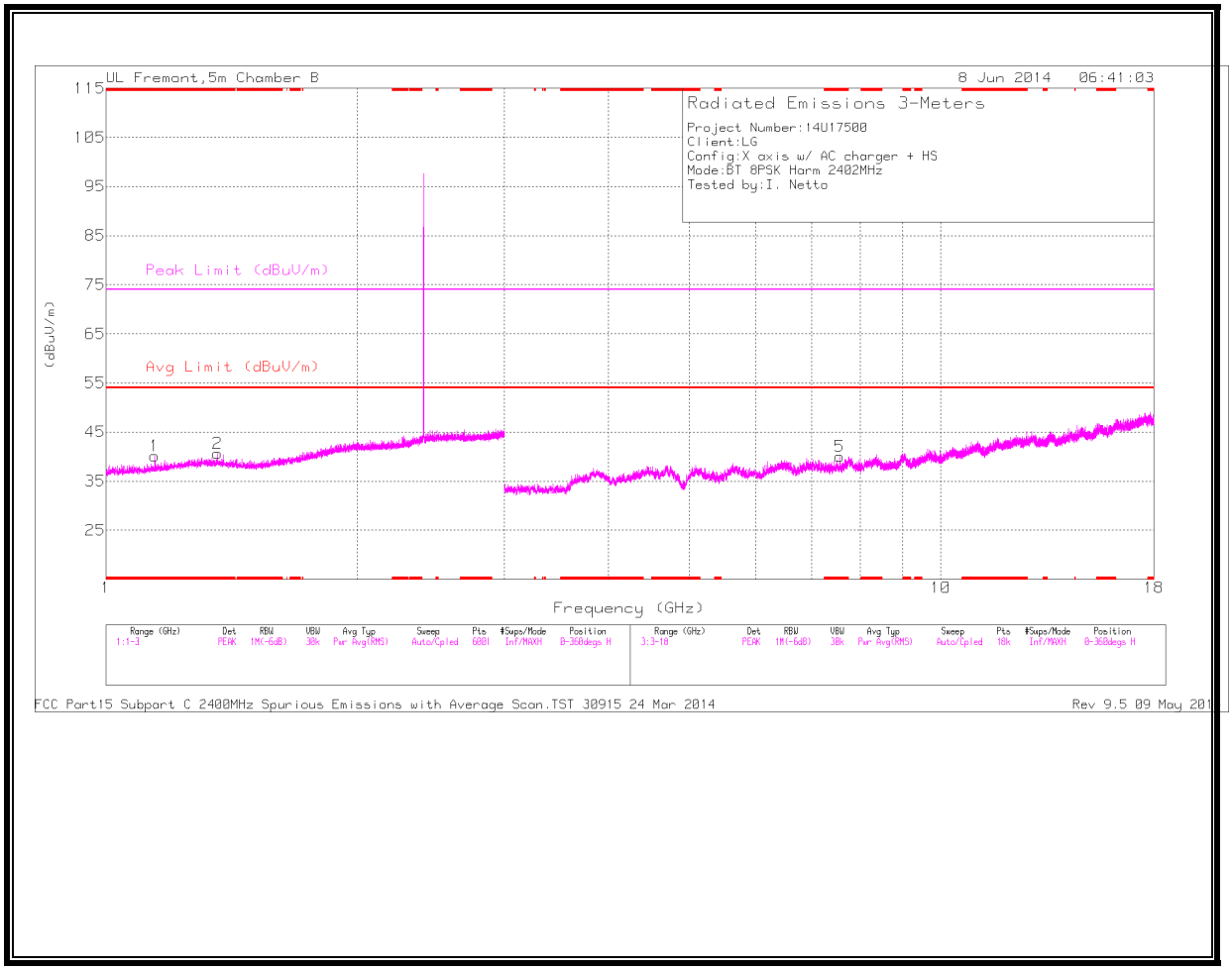
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

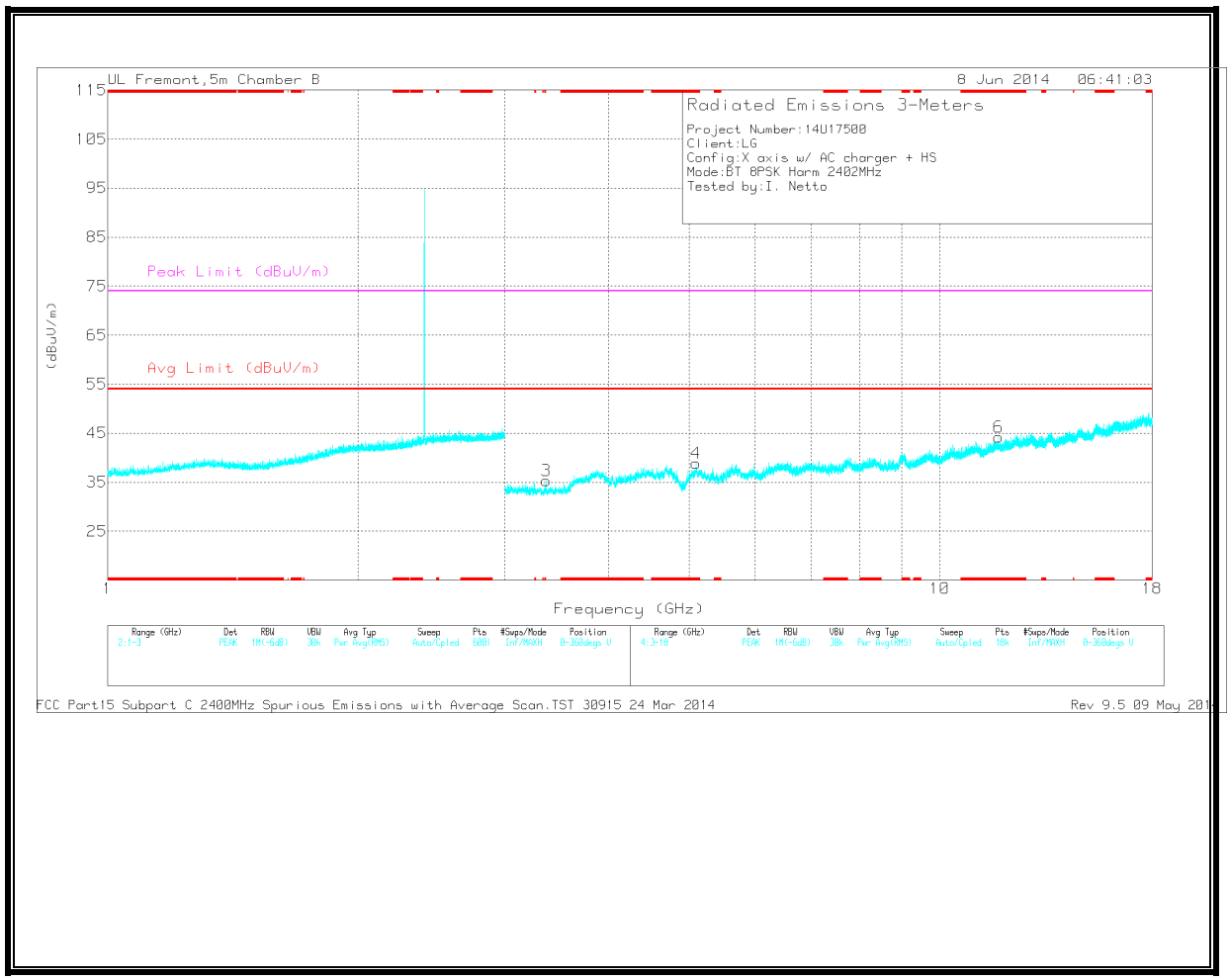
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.144	37.18	PK	27.7	-24.7	40.18	-	-	74	-33.82	0-360	200	H
2	* 1.36	36.32	PK	28.7	-24.4	40.62	-	-	74	-33.38	0-360	200	H
5	* 7.564	31.66	PK	35.6	-27.2	40.06	-	-	74	-33.94	0-360	101	H
4	* 5.094	33.13	PK	34.2	-28.5	38.83	-	-	74	-35.17	0-360	101	V
6	* 11.77	27.64	PK	38.3	-21.7	44.24	-	-	74	-29.76	0-360	101	V
3	3.364	33.89	PK	32.8	-31.4	35.29	-	-	-	-	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

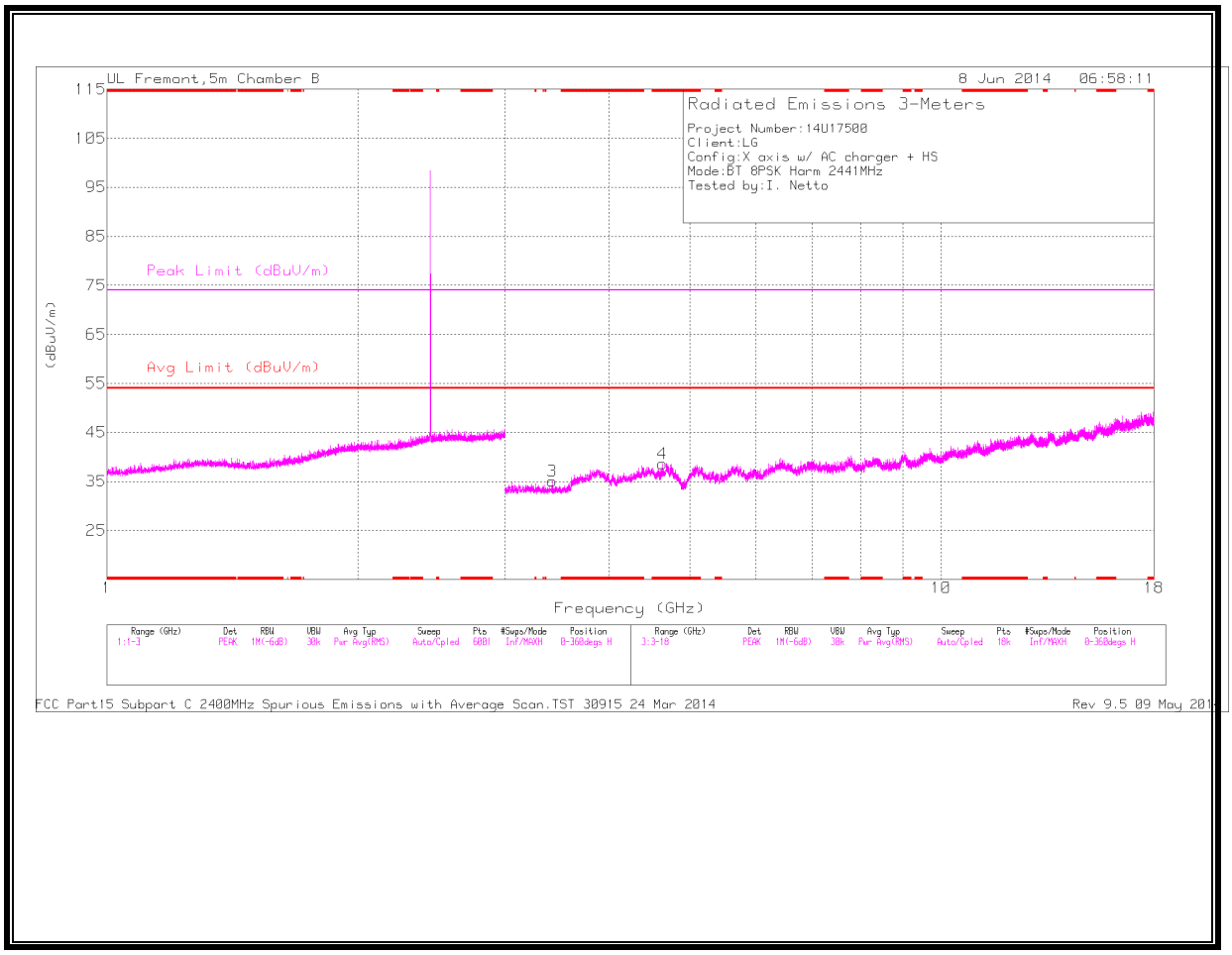
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.143	45	PK3	27.7	-24.7	48	-	-	74	-26	1	201	H
* 1.358	42.99	PK3	28.7	-24.4	47.29	-	-	74	-26.71	1	201	H
* 7.563	38.46	PK3	35.6	-27.2	46.86	-	-	74	-27.14	1	102	H
* 5.096	40.52	PK3	34.2	-28.5	46.22	-	-	74	-27.78	1	102	V
* 11.77	34.47	PK3	38.3	-21.7	51.07	-	-	74	-22.93	1	102	V
3.362	41.75	PK3	32.8	-31.5	43.05	-	-	-	-	1	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

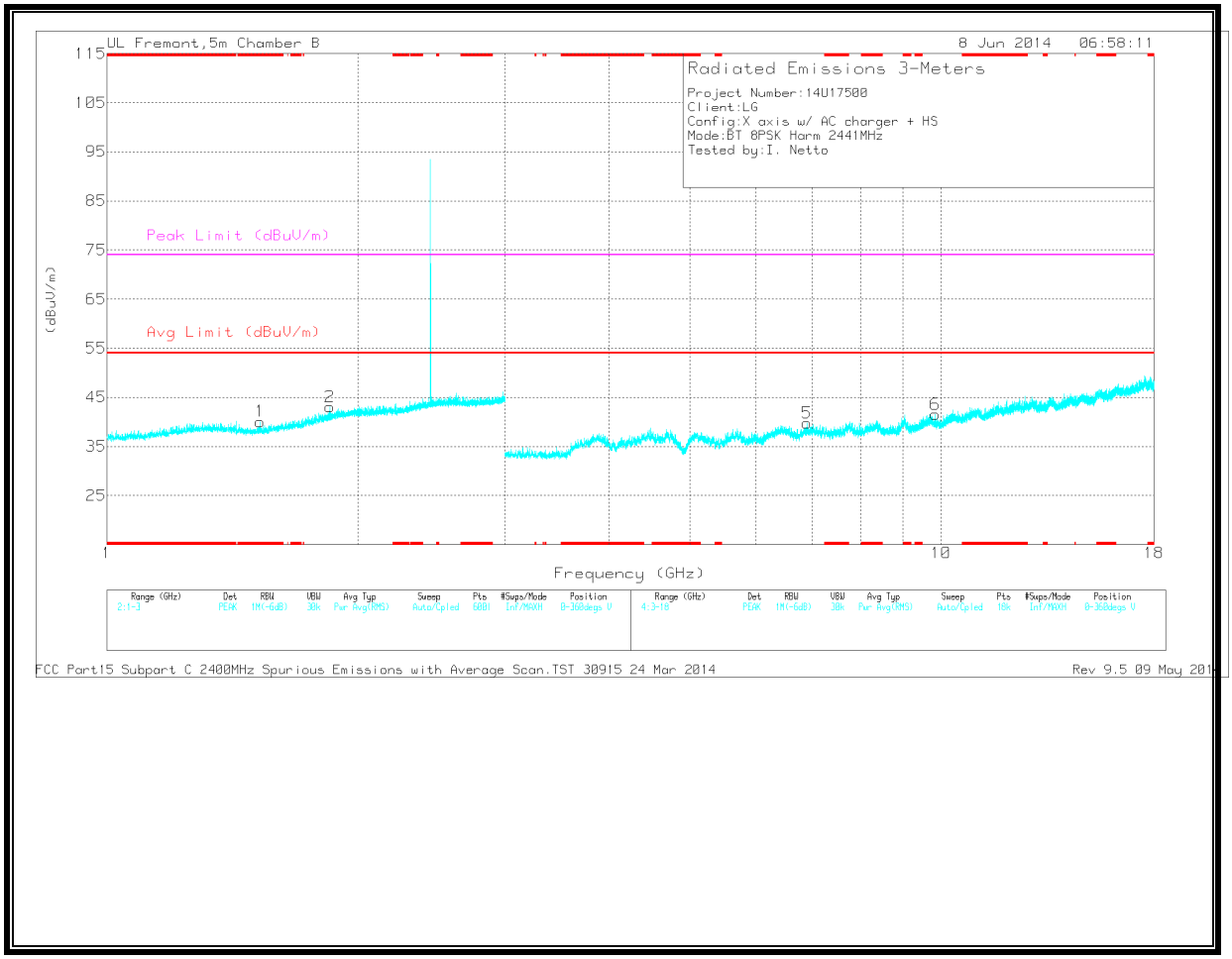
PK3 - FHSS Method: Maximum Peak

MID CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.526	36.08	PK	28.1	-24.1	40.08	-	-	74	-33.92	0-360	101	V
4	* 4.631	35.19	PK	34.2	-30.8	38.59	-	-	74	-35.41	0-360	201	H
2	1.849	36.12	PK	30.6	-23.7	43.02	-	-	-	-	0-360	101	V
3	3.42	33.41	PK	32.8	-31.1	35.11	-	-	-	-	0-360	201	H
5	6.903	31.83	PK	35.6	-27.7	39.73	-	-	-	-	0-360	201	V
6	9.836	28.56	PK	36.9	-23.9	41.56	-	-	-	-	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

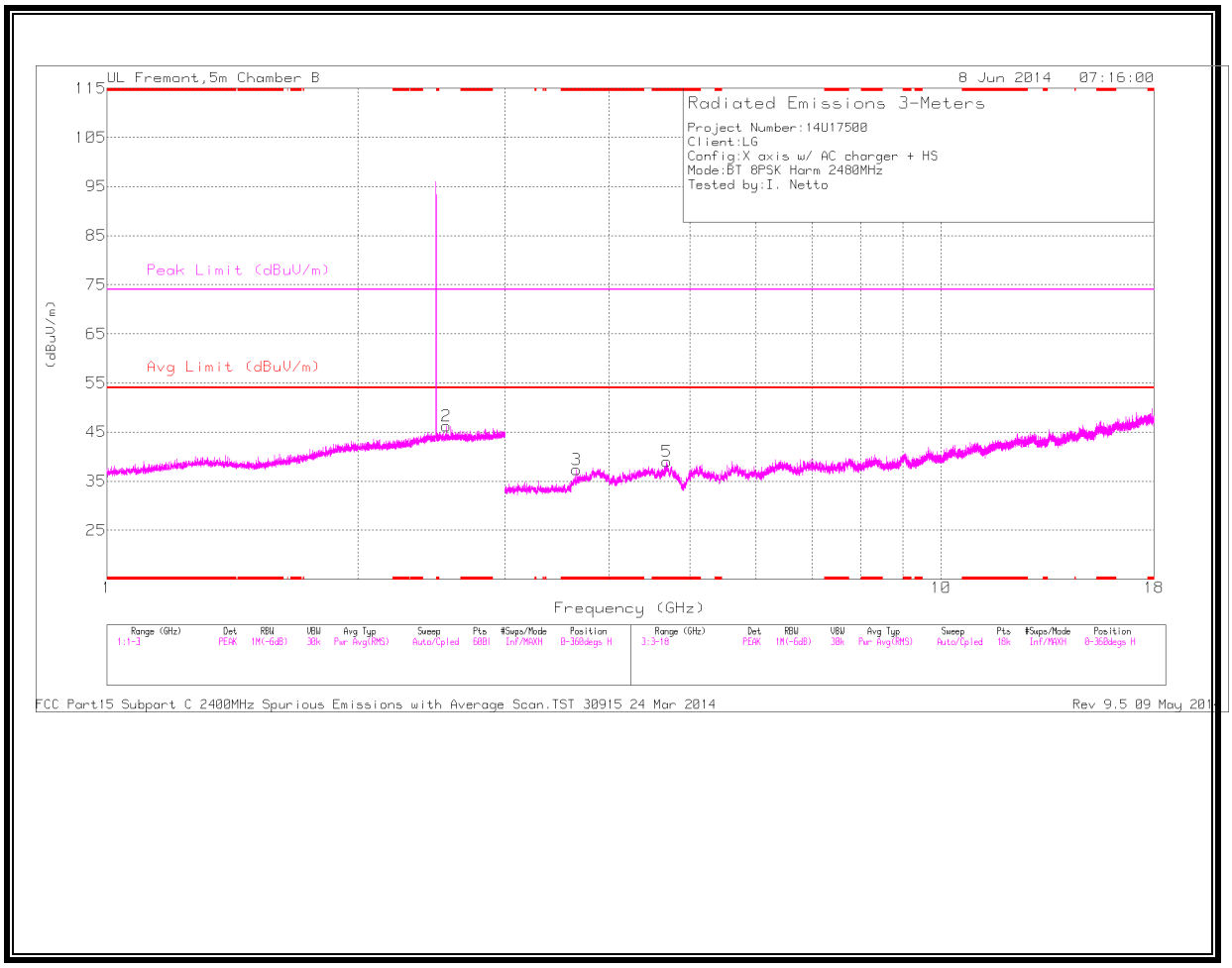
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.528	43.1	PK3	28.1	-24.1	47.1	-	-	74	-26.9	1	101	V
* 4.63	42.01	PK3	34.2	-30.8	45.41	-	-	74	-28.59	1	202	H
1.847	43.56	PK3	30.6	-23.7	50.46	-	-	-	-	1	101	V
3.419	41.32	PK3	32.8	-31.1	43.02	-	-	-	-	1	202	H
6.902	38.46	PK3	35.6	-27.7	46.36	-	-	-	-	1	202	V
9.836	35.34	PK3	36.9	-23.9	48.34	-	-	-	-	1	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

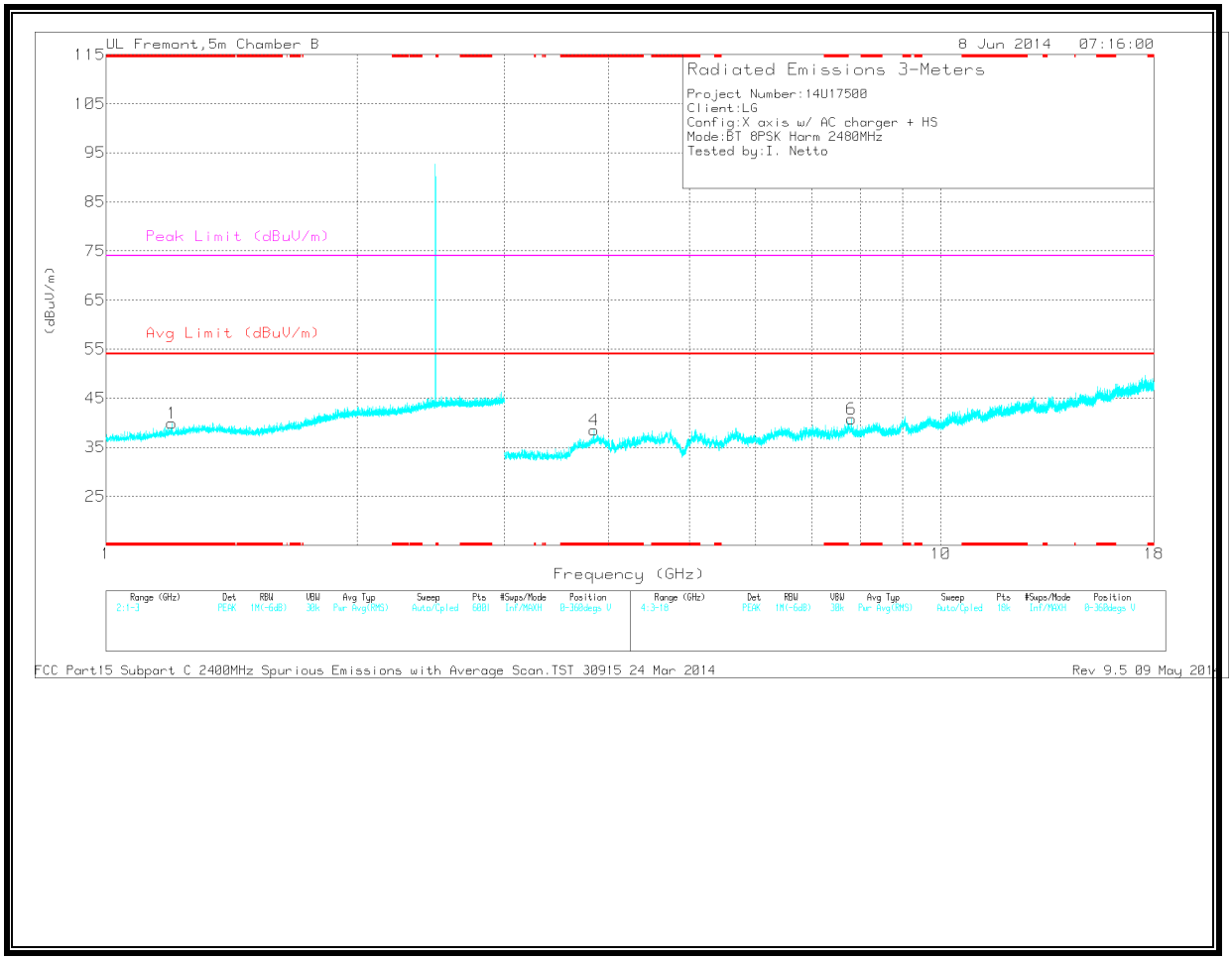
PK3 - FHSS Method: Maximum Peak

HIGH CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.199	36.33	PK	28.2	-24.6	39.93	-	-	74	-34.07	0-360	101	V
3	* 3.657	35.24	PK	33.2	-31.1	37.34	-	-	74	-36.66	0-360	101	H
5	* 4.688	34.74	PK	34.2	-29.9	39.04	-	-	74	-34.96	0-360	201	H
4	* 3.843	35.07	PK	33.7	-30.3	38.47	-	-	74	-35.53	0-360	201	V
2	2.55	36.38	PK	32.5	-22.6	46.28	-	-	-	-	0-360	101	H
6	7.82	30.93	PK	35.7	-25.8	40.83	-	-	-	-	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.197	44.21	PK3	28.2	-24.6	47.81	-	-	74	-26.19	1	101	V
* 3.659	42.22	PK3	33.2	-31.1	44.32	-	-	74	-29.68	1	101	H
* 4.686	42.07	PK3	34.2	-30	46.27	-	-	74	-27.73	1	202	H
* 3.843	41.52	PK3	33.7	-30.3	44.92	-	-	74	-29.08	1	202	V
2.55	43.81	PK3	32.5	-22.6	53.71	-	-	-	-	1	101	H
7.82	38.08	PK3	35.7	-25.8	47.98	-	-	-	-	1	202	V

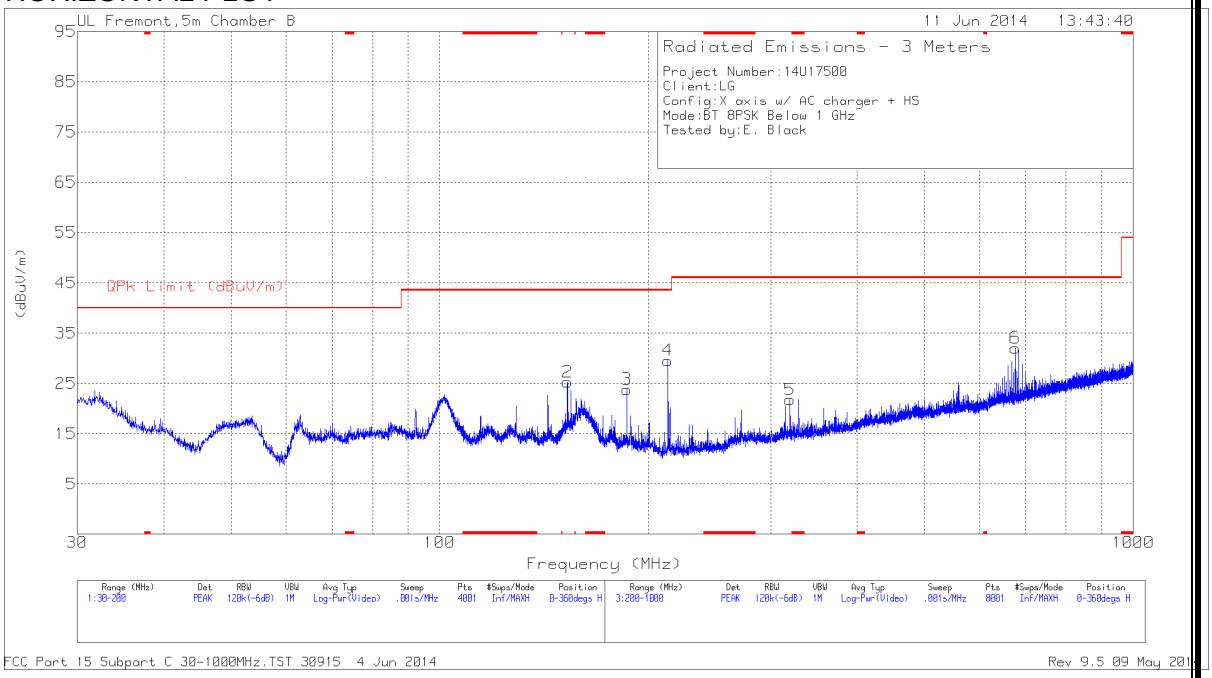
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

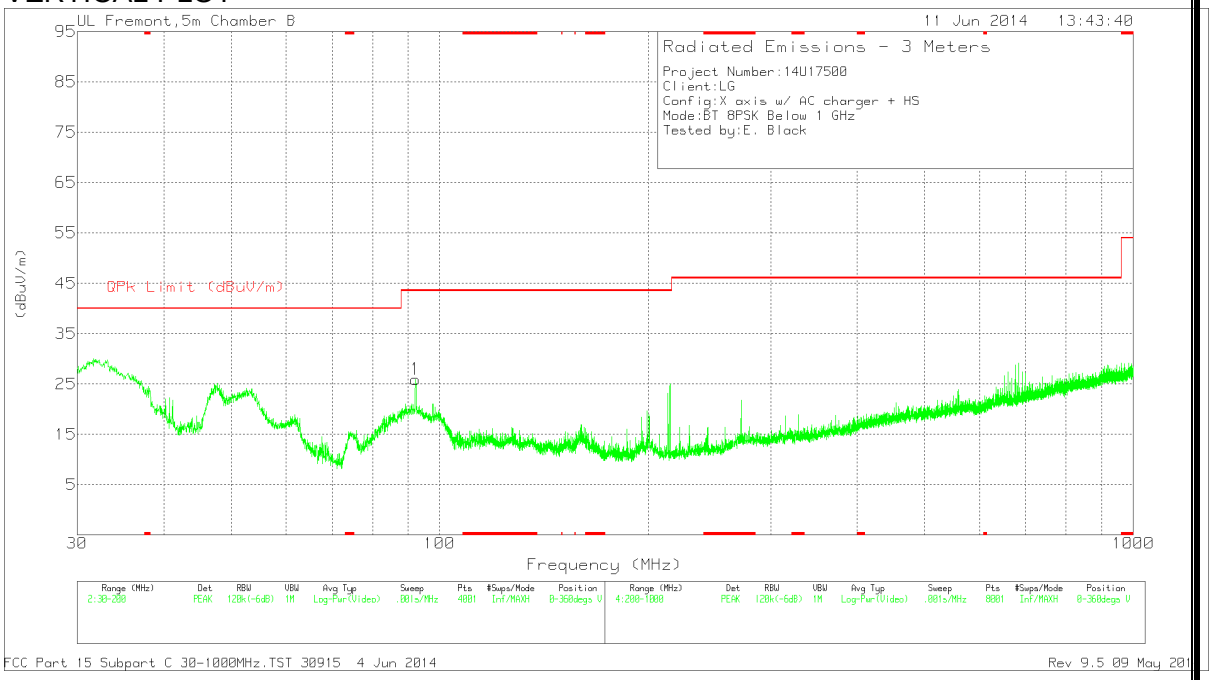
8.3. WORST-CASE BELOW 1 GHz

GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	92.2625	45.84	PK	8.2	-28.1	0	25.94	43.52	-17.58	0-360	101	V
2	152.825	40.38	PK	12.3	-27.4	0	25.28	43.52	-18.24	0-360	200	H
3	186.145	39.91	PK	10.9	-27	0	23.81	43.52	-19.71	0-360	100	H
4	213.3	45.89	PK	10.5	-26.8	0	29.59	43.52	-13.93	0-360	200	H
5	320	33.76	PK	13.9	-25.9	0	21.76	46.02	-24.26	0-360	101	H
6	676	37.27	PK	19.6	-24.8	0	32.07	46.02	-13.95	0-360	200	H

PK - Peak detector